

**REMARKS**

The present application has been carefully studied and amended in view of the outstanding Office Action dated January 3, 2005, and reconsideration of that Action is requested in view of the following comments.

Claims 1 to 10 are presently pending in this application, and claims 1, 2, 8, and 10 are currently amended. These amendments are based on the specification as follows:

Claim 1, specification page 2, line 31.

Claim 2, specification page 3, lines 1 to 7.

Claim 8, specification page 5, lines 8 and 9, and page 2, line 31.

Claim 10, the incorrect expression "one-component coating composition" has been replaced by the well known and recognized term - - one-pack coating composition - - .

No new matter has been introduced.

**1. *Rejection under 37 CFR 1.75 (c)***

Claim 2 has been objected under 37 CFR 1.75 (c) as being an improper dependent form for failing to further limit the subject matter of the claim from which it depends. This rejection is respectfully traversed, for the following reasons.

Claim 2 is directed to a resin **ABCDE** which is made by polymerizing unsaturated monomers **E** in the presence of polyester **ABCD**, thereby generating a polymer mixture or a graft copolymer, denoted by **ABCDE**. This graft copolymer contains a mass fraction of from 20 % to 80 % of vinyl polymer which is made by polymerization of the

monomers **E**, the residual 80 % to 20 % being derived from the polyester, **ABCD**. Such is recited in claim 2.

The maximum value for the content of sulfonic acid groups in the polymer mixture or graft copolymer **ABCDE** is reached if a polyester **ABCD** having a sulfonic acid group content of 300 mmol/kg (the upper limit of original claim 1) is present in the polymer mixture in a mass fraction of 80 %, by simple multiplication:  $300 \text{ mmol/kg} \times 80 \% = 240 \text{ mmol/kg}$ .

The smallest amount of sulfonic acid groups in the polymer mixture or graft copolymer **ABCDE** is attained if a polyester **ABCD** of sulfonic acid group content of 20 mmol/kg (the lower limit of original claim 1) is present in a mass fraction of 20 % in the polymer mixture or graft copolymer **ABCDE**, calculated as  $20 \text{ mmol/kg} \times 20 \% = 4 \text{ mmol/kg}$ .

It is respectfully requested that these arguments be considered by the Examiner, and further that this rejection be withdrawn in view of the above explanation.

**2. *Rejection under 35 U. S. C. 102 (b)***

Claims 1-10 stand rejected under 35 U. S. C. 102 (b) over the Vachon, US 4,119,680, and the WO 95/05413 references. These claims are believed to distinguish over the references for the following reasons.

The Vachon '680 reference is directed to a copolyester binder, where a polyester comprising units of dicarboxylic acids (1), diols (2), difunctional carboxylic acid sulfo comonomer (3) having a SO<sub>3</sub>M group, and an alpha, beta unsaturated dicarboxylic acid (4) in an amount-of-substance fraction in the polyester of from 4 % to 8 %, selected from the group consisting of fumaric, maleic, itaconic, and p-carboxycinnamic acids, is

dispersed in water, and a mixture of vinyl monomers is polymerized in the presence of this dispersion.

The '413 reference, which is the WO equivalent of the parent application of Kuo, US 6,576,717 B1, is directed to a water dispersible resin composition comprising an acrylic modified polyester which is made by bulk or solution addition copolymerization of at least one ethylenically unsaturated vinyl monomer in the presence of a preformed polyester resin dissolved in an organic solvent, which the polyester is the reaction product of (a) an at least difunctional carboxylic acid which is not a sulfo monomer, (b) at least one sulfomonomer having at least one sulfonate group and at least one functional group selected from the group consisting of hydroxyl, carboxyl, and amino groups, (c) at least one difunctional reactant which is selected from the group consisting of glycols, and mixtures of glycols and diamine, and (d) at least one ethylenically unsaturated monomer which contains at least one carboxyl, hydroxyl, anhydride or epoxy groups. The copolyester itself is not carried into the aqueous phase, and this dispersion step is only known for the graft copolymer.

It is respectfully submitted that the polyesters **ABCD** of the present invention, and also the modified polyesters **ABCDE** made by polymerizing olefinically unsaturated monomers in the presence of an aqueous emulsion of the polyesters **ABCD** are not anticipated by the cited art.

As clearly set forth in amended claim 1, only such polyesters are claimed that have a certain range of sulfonic acid group content, viz., from 30 mmol/kg to 200 mmol/kg.

Although the Vachon '680, and the Kuo '717 references, as well as the equivalent WO '413 reference, generally disclose copolyesters of similar composition of matter, no disclosure of this specific range of sulfonic acid groups content can be found in the cited art.

When the Examples are considered, it is found that in Example 1 of the '680 reference, a sulfonic acid group content in the polyester of 287 mmol/kg is found, which can be calculated from the quantities of reactants used as follows: from 0.12 mol of the sodium salt of sulfoisophtalic acid, and the other reactants, 418 g of solid resin is made. This mass is calculated from the sums of masses of the reactants, and deduction of the alcohols and water formed by transesterification. Division of 120 mmol by 0.418 kg yields the value of 287 mmol/kg.

Similarly, Example 13 and 14 of the '680 reference have a resin with a specific content of sulfonic acid groups of 401 mmol/kg: 10 % of the amount of substance of acid components, divided by the mass of resin (1 mol of DEG , 106 g; 0.9 mol of IPA, 149.5 g; and 0.1 mol of sodium sulfoisophthalate, 29.6 g; minus 2 mol of water, 36 g) is  $100 \text{ mmol}/(285 \text{ g} - 36 \text{ g}) = 401 \text{ mmol/kg}$ .

In the Kuo reference, as well as in the corresponding WO '413 reference, Example 1 has a specific content of sulfonic acid groups of 214 mmol/kg, Example 3 has a value of 232 mmol/kg, Example 5 of 228 mmol/kg, and Example 7 of 486 mmol/kg.

Therefore, none of these references anticipate the subject matter as specifically recited in claim 1. Remaining claims 2-10 are depend on claim 1, either directly or

indirectly. The subject matter of these claims clearly distinguishes over these references, and withdrawal of rejection is therefore respectfully requested.

It is also submitted that the subject matter of the claims 1-10, as amended, is not rendered obvious by any of applied references.

During the course of the experiments that led to the present invention, it was found that by keeping the specific content of sulfonic acid groups in the polyester, and accordingly, also in the graft copolymer made by polymerizing acrylic monomers in the presence of an aqueous emulsion of the polyester, fast-drying binder systems can be obtained which can also accept high loads of pigments without undue prolongation of drying, which have high mass fraction of solids, do not show any propensity to develop pop marks in clearcoats in thick layers, do not tend to form wrinkles upon drying, and also, are not affected by dye pastes such as shoe polish to develop discolouration. See specification page 2, lines 5 to 11, and page 6, lines 1 to 13. Clearly, these improvements could not have been expected from the cited prior art.

Therefore, applicants also are of the opinion that the subject matter as now claimed fully complies with the requirements of 35 U. S. C., § 103, and favorable reconsideration is respectfully requested.


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Accordingly, for the reasons expressed above, the application is now believed to be in condition for allowance and Notice to that effect is respectfully requested.

Respectfully submitted,

CONNOLLY BOVE LODGE AND HUTZ LLP

By 

Richard M. Beck

Reg. No. 22,580

Telephone: 302 658-9141

RMB/alh/389477